

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : NIPPON ELECTRIC IND CO LTD

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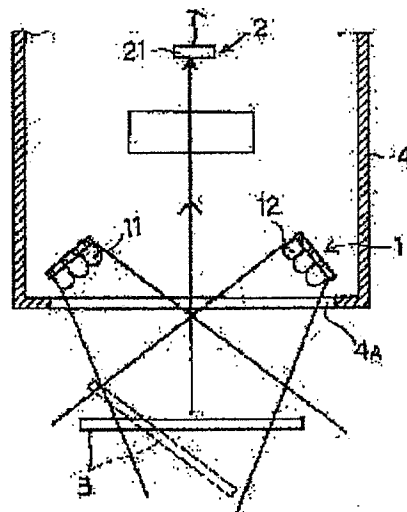
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NAGASE TOSHIYUKI

(54) METHOD FOR LIGHT PROJECTION OF BAR CODE READER

(57)Abstract:

PURPOSE: To effectively preclude a defect in reading and a failure in reading due to regular reflection.

CONSTITUTION: A couple of left and right (upper and lower) light sources 11 and 12 which slant to each other are provided at a projection opening 4A, and only the left (Lower) or right (upper) light source 11 is turned on; and the information is securely read in one excellent lighting state. Consequently, the defect in reading due to regular reflection can be evaded even for, for example, a bar code symbol positioned in the regular reflection area of the bar code reader.



【特許請求の範囲】

【請求項1】 投光口近傍に一对の光源を傾斜して設けたバーコードリーダにおいて、前記光源を片方ずつ点灯させることを特徴とするバーコードリーダの投光方法。

【発明の詳細な説明】

【0001】

【産業上の利用分野】この発明は、バーコードシンボルを光学的に読取るバーコードリーダに係り、特に光源から投光される光の強度が過大なために読取不可能な領域が発生するのを防止するバーコードリーダの投光方法に関するものである。

【0002】

【従来の技術】バーコードラベルに記載したバーコードシンボルを光学的に読取るバーコードリーダが開発され使用されている。通常、このバーコードリーダは、発光ダイオード(LED)等を用いた投光部を備えており、バーコードラベルに向けて読取光を投光させるようになっている。

【0003】

【発明が解決しようとする課題】通常この投光部から出射する読取光は、一定方向に定められており、例えば図4に示すように、投光部(図略)から出射する読取光 α のうちバーコードラベル100にて正反射して戻る光 β 及びその近傍の光は、光強度が強過ぎてしまうことがある。その結果、白黒のコントラストに差がなくなってしまう読取不能となる場合があり、特に据置タイプのバーコードリーダにあっては、大きな問題となっている。そこで、この発明は、上記した事情に鑑み、正反射に起因した読取り不良や読取不能等のトラブルの発生を有効に防止できるバーコードリーダの投光方法を提供することを目的とするものである。

【0004】

【課題を解決するための手段】即ち、この発明は、投光口近傍に一对の光源を傾斜して設けたバーコードリーダにおいて、前記光源を片方ずつ点灯させるものである。

【0005】

【作用】この発明では、投光口に設けた左右一对の互いに傾斜した光源に対し片側ずつ点灯させ、つまり左方のみ若しくは右方のみを独立別個に点灯させ、何れか良好な方の照明状態により、情報の確実な読取りを行うことができる。これにより、例えば正反射領域にあるバーコードシンボルに対しても、正反射による読取誤差を伴う虞れのある情報読取りが回避できるようになる。

【0006】

【実施例】以下この発明の一実施例について添付図面を参照しながら説明する。図1はこの発明の投光方法が適用されるバーコードリーダの光学系を示すものであり、この光学系は、左右一对の光源11、12からなる投光部1と、CCD(電荷結合素子)21を用いた受光部2

とから構成されている。なお、図中符号3はバーコードラベルを示す。光源11、12は、夫々三連のLED(LEDアッシ)が用いられており、ハウジング4内の投光口4A近傍において互いに反対方向に同一角度傾斜した対称位置に設けられている。

【0007】次に、この実施例に係るバーコードリーダの光学系を用いた投光方法について説明する。なお、この実施例にあっては、図2に示すように据置タイプのバーコードリーダについて説明するが、勿論片手で操作するハンディタイプのものであっても適用可能である。この実施例に係る投光方法にあっては、例えば図2において、バーコードラベル3が貼付された梱包箱6がコンベアベルト7によって搬送される。そして光学センサ5Aによってその梱包箱6が搬送されてきたことを検知すると、図示外の制御部から出力される信号により、左右両光源11、12が同時に点灯→右(左)光源11(12)のみ→左(右)光源12(11)のみ点灯の三種のフラッシュ点灯動作を順次繰り返す。そして受光部2がバーコードシンボルを正確に読取ったところで、制御部からの制御信号が出力を停止し、これによってそのバーコードラベルに対する読取り動作が完了する。なお、バーコードラベルの汚損等により、正確な読取りが行えない場合には、光学センサ5Bを梱包箱6が通過したことを検知して点灯動作が停止する。

【0008】従って、この実施例によれば、例えば図1において、バーコードラベル3が実線位置の姿勢にあるときには、左右の光源11、12の何れか一方のみの点灯動作を行うことにより、正反射による読取り不良が防止できる。また、破線位置にあるときには、光源11による点灯の場合に正反射による読取り不良が発生せず、正確、かつ確実な情報読取りを行うことができる。なお、この実施例にあっては、光源をハウジング内に左右一对設けたが、図3に示すように光源11'、12'をハウジング4'内の上下に設けてもよい。

【0009】

【発明の効果】以上説明してきたように、この発明によれば、左右一对の互いに傾斜して設けた光源を片側ずつ点灯させるため、何れか良好な方の照明状態により情報の確実な読取りを行うことができ、換言すれば、左右何れかの正反射をおこさぬ方の読取光を用いて情報の読取りを行うことができ、これによって確実に情報の読取りが行えるようになり、信頼度が大幅に向上する。

【図面の簡単な説明】

【図1】この発明が適用された光学系を示す概略構成図。

【図2】この発明の投光方法を説明する斜視図。

【図3】変形例を示す概略構成図。

【図4】従来の欠点を示す説明図。

【符号の説明】

1 投光部

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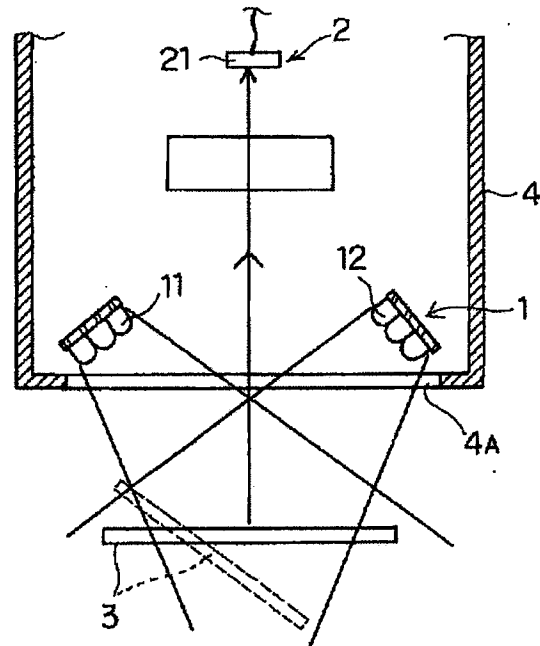
(74)代理人 弁理士 増田 竹夫

(54)【発明の名称】 バーコードリーダの投光方法

(57)【要約】

【目的】 正反射に起因した読取不良や読取不能の発生を有効に防止する。

【構成】 投光口4Aに設けた左右(上下)一対の互いに傾斜した光源11、12に対し、左方(下方)12のみ若しくは右方(上方)11のみの片側ずつ点灯させ、何れか良好な方の照明状態により、情報の確実な読取りを行う。これにより、例えばバーコードリーダの正反射領域に位置するバーコードシンボルに対しても、正反射による読み取り不良が回避できるようになる。



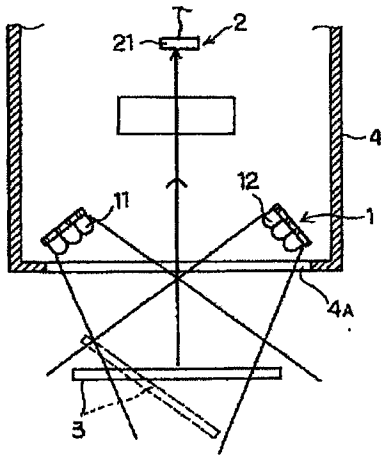
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特開平6-124361

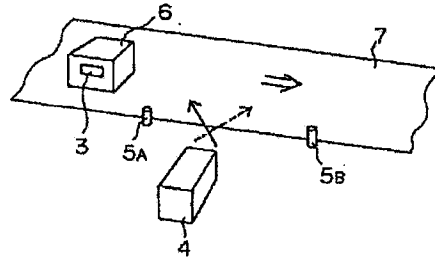
- 2 受光部
3 バーコードラベル

- 4 (バーコードリーダ) ハウジング
11, 12 光源

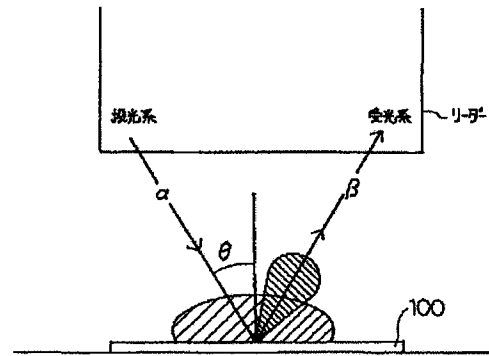
【図1】



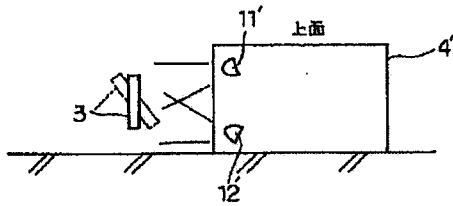
【図2】



【図4】



【図3】



Machine Translation

Japanese Patent - 06-124361

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] Since this invention has the excessive luminous intensity which starts the bar code reader which reads a bar code symbol optically, especially is floodlighted from a light source, it relates to the floodlighting method of the bar code reader which prevents the field which cannot be read from occurring.

[0002]

[Description of the Prior Art] The bar code reader which reads optically the bar code symbol indicated to the barcode label is developed and used. Usually, this bar code reader is provided with the light projection part which used the light emitting diode (LED) etc.

Read light is made to floodlight towards a barcode label.

[0003]

[Problem(s) to be Solved by the Invention] Usually, as the read light emitted from this light projection part is provided in the certain direction, for example, it is shown in drawing 4, the light beta which carries out regular reflection and returns with the barcode label 100 among the read light alpha emitted from a light projection part (figure abbreviation), and the light of that neighborhood may have too strong light intensity. As a result, it has been a big problem, if a difference may be lost in monochrome contrast, reading may become impossible and it is especially in a deferment type bar code reader. Then, an object of this invention is to provide the floodlighting method of the bar code reader which can prevent effectively generating of troubles, such as reading failure resulting from regular reflection, and reading impossible, in view of the above-mentioned situation.

[0004]

[Means for Solving the Problem] That is, this invention makes said light source turn on one side at a time in a bar code reader which inclined and provided a light source of a couple near the floodlight opening.

[0005]

[Function] In this invention, the light can be made to be able to switch on every [single-sided] to the light source in which the right-and-left couple provided in the floodlight opening inclined mutually, that is, only a left can make the individual according to independence able to turn on only the right direction, and the illumination state of any or the better one can perform positive reading of information. Thereby, information reading with a possibility that it may be accompanied by the error of reading by regular reflection can be avoided now also to the bar code symbol which is in a regular reflection region, for example.

[0006]

[Example]It explains referring to an accompanying drawing for one example of this invention below. Drawing 1 shows the optical system of the bar code reader to which the floodlighting method of this invention is applied, and this optical system comprises the light projection part 1 which consists of the light sources 11 and 12 of a right-and-left couple, and the light sensing portion 2 using CCD(charge coupled device) 21. The numerals 3 in a figure show a barcode label. As for the light sources 11 and 12, LED (LED hachis) of three reams is used, respectively.

[near the floodlight opening 4A in the housing 4], it is mutually provided in the counter direction at the position of symmetry which carried out the identical angle inclination.

[0007]Next, the floodlighting method using the optical system of the bar code reader concerning this example is explained. If it is in this example, as shown in drawing 2, a deferment type bar code reader is explained, but it is applicable even if it is a thing of the handicap type operated single hand, of course. If it is in the floodlighting method concerning this example, for example in drawing 2, the container box 6 with which the barcode label 3 was stuck is conveyed with the conveyor belt 7. With and the signal which will be outputted from the control section besides a graphic display if it detects that the container box 6 has been conveyed by the photo sensor 5A. Right-and-left both the light sources 11 and 12 lighting -> right (left) light source 11 (12) accept it simultaneously, and repeat successively three sorts of flash plate lighting operations of lighting of only -> left (right) light source 12 (11). And in the place where the light sensing portion 2 read the bar code symbol correctly, the control signal from a control section suspends an output, and the read operation to the barcode label is completed by this. By corruption of a barcode label, etc., when exact reading cannot be performed, it detects that the container box 6 passed the photo sensor 5B, and lighting operation stops.

[0008]Therefore, according to this example, for example in drawing 1, when the barcode label 3 is in the posture of a real line position, the reading failure by regular reflection can be prevented by performing one lighting operation of the light sources 11 and 12 on either side. When it is in a dashed line position, in lighting by the light source 11, the reading failure by regular reflection does not occur, but exact and positive information reading can be carried out to it. If it was in this example, one pair of right and left provided the light source in housing, but as shown in drawing 3, light source 11' and 12' may be provided in the upper and lower sides in housing 4'.

[0009]

[Effect of the Invention]As explained above, according to this invention, incline mutually [a right-and-left couple] and the provided light source every [single-sided] In order to make the light switch on, If the illumination state of any or the better one can perform positive reading of information and it puts in another way,

direction it does not cause which regular reflection on either side, information can be read using read light, by this, reading of information can be ensured now and reliability will improve substantially.

TECHNICAL FIELD

[Industrial Application] Since this invention has the excessive luminous intensity which starts the bar code reader which reads a bar code symbol optically, especially is floodlighted from a light source, it relates to the floodlighting method of the bar code reader which prevents the field which cannot be read from occurring.

PRIOR ART

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MEANS

[Means for Solving the Problem]That is, this invention makes said light source turn on one side at a time in a bar code reader which inclined and provided a light source of a couple near the floodlight opening.

OPERATION

[Function]In this invention, the light can be made to be able to switch on every [single-sided] to the light source in which the right-and-left couple provided in the floodlight opening inclined mutually, that is, only a left can make the individual according to independence able to turn on only the right direction, and the illumination state of any or the better one can perform positive reading of information. Thereby, information reading with a possibility that it may be accompanied by the error of reading by regular reflection can be avoided now also to the bar code symbol which is in a regular reflection region, for example.

EXAMPLE

[Example]It explains referring to an accompanying drawing for one example of this invention below. Drawing 1 shows the optical system of the bar code reader to which the floodlighting method of this invention is applied, and this optical system comprises the light projection part 1 which consists of the light sources 11 and 12 of a right-and-left couple, and the light sensing portion 2 using CCD(charge coupled device) 21. The numerals 3 in a figure show a barcode label. As for the light sources 11 and 12, LED (LED hachis) of three reams is used, respectively.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The outline lineblock diagram showing the optical system to which this invention was applied.

[Drawing 2]The perspective view explaining the floodlighting method of this invention.

[Drawing 3]The outline lineblock diagram showing a modification.

[Drawing 4]The explanatory view showing the conventional fault.

[Description of Notations]

- 1 Light projection part
- 2 Light sensing portion
- 3 Barcode label
- 4 (Bar code reader) Housing
- 11 and 12 Light source

[Claim(s)]

[Claim 1]A floodlighting method of a bar code reader making said light source turn on one side at a time in a bar code reader which inclined and provided a light source of a couple near the floodlight opening.